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Name DAISY HOWARTH.

"READER—*PERSEVERE.*"

BEECHAM'S

Help to Scholars

(NEW AND ENLARGED EDITION)

CONTAINING

ARITHMETICAL TABLES AND SIGNS,
WEIGHTS AND MEASURES,
TABLES OF THE METRIC SYSTEM,
GEOGRAPHICAL AND GEOMETRICAL DEFINITIONS,
SOL-FA MODULATOR,
and other useful information arranged progressively.

Published by the Proprietors of "BEECHAM'S PILLS" and "BEECHAM S POWDERS" with the hope of rendering some assistance to the Youth of the Country. The publication of Beecham's Help to Scholars commenced in July, 1889, since when 42,000,000 copies have been given away.—*Jan, 1929.*

BEECHAMS PILLS, Ltd.
ST. HELENS LANCASHIRE

GREENFIELD HOUSE
HECKMONDWIKE.

INTRODUCTION.

THE PROPRIETORS OF BEECHAM'S PILLS AND BEECHAM'S POWDERS have great pleasure in continuing the free publication of "Beecham's Help to Scholars," as they have much gratifying evidence to show how highly it is appreciated by both Teachers and Pupils. They have endeavoured to make the contents as clear, concise and comprehensive as possible, and they believe this desired result has been attained.

This new and enlarged edition contains new features in the diagrams which illustrate the "Geometry Definitions" on pages 14, 15 and 16, and in the "Rapid Decimalisation of Money" on page 10.

The Proprietors have always desired that this useful little "Help to Scholars," which is distributed free of any charge, shall justify its title, and every other consideration has been subordinated to this object.

THE MODULATOR

(COPYRIGHT).

d' f' t m' l ma' re' se r' l ra' de' ba se s DOH' f ba TE m f ta le m LAH r la se SOH d r fe t, ba d FAH ME l, t, ma re se r RAY S, l, ra de ba se, S, DOH f, ba, t, m, f, ta, le r, m, l, la, se, S, d, r,

By special arrangement with J. Curwen & Sons, Ltd

ARITHMETICAL TERMS, SIGNS, &c.

All computations in Arithmetic are performed by one of the processes known as

ADDITION, SUBTRACTION, MULTIPLICATION, AND DIVISION.

The terms used in Multiplication are :—

(*a*) The Multiplier, or number that Multiplies.
(*b*) The Multiplicand, or number to be Multiplied.
(*c*) The Product, or result of the Multiplication.

The terms used in Division are :—

(*a*) The Dividend, or number to be divided.
(*b*) The Divisor, or number by which you divide.
(*c*) The Quotient, or result of the Division.

To find the SUM, add the numbers.
,, ,, ,, DIFFERENCE, subtract.
,, ,, ,, PRODUCT, multiply.
,, ,, ,, QUOTIENT, divide.

+ plus or more	signifies	addition	as $6 + 3 = 9$
— minus or less	,,	subtraction	,, $8 - 5 = 3$
× multiplied by	,,	multiplication	,, $4 \times 2 = 8$
÷ divided by	,,	division	,, $8 \div 4 = 2$
= equal to	,,	equality	,, $3 + 2 = 5$

$\therefore$ signifies therefore. $\because$ signifies because.
: :: : are the signs of proportion.
6 : 14 :: 18 : 42 means, as 6 is to 14 so is 18 to 42.

$\sqrt{}$ sign of square root, as $\sqrt{9} = 3$. $\sqrt{16} = 4$. $\sqrt{36} = 6$.
$6^2 = 6 \times 6 = 36$.
$8^2 = 8 \times 8 = 64$.

$\sqrt[3]{}$ sign of cube root, as $\sqrt[3]{27} = 3$. $3^3 = 3 \times 3 \times 3 = 27$.

( ) { } [ ] are brackets ; all quantities between them are treated as one.

D or d signifies Denarii or pence. L or £ signifies Libræ or pounds.
S or s ,, Solidi or shillings. % ,, per cent.

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BEECHAM'S HELP TO SCHOLARS.

FOR MULTIPLICATION AND DIVISION.

Twice		
1	are	2
2	,,	4
3	,,	6
4	,,	8
5	,,	10
6	,,	12
7	,,	14
8	,,	16
9	,,	18
10	,,	20
11	,,	22
12	,,	24

3 times		
1	are	3
2	,,	6
3	,,	9
4	,,	12
5	,,	15
6	,,	18
7	,,	21
8	,,	24
9	,,	27
10	,,	30
11	,,	33
12	,,	36

4 times		
1	are	4
2	,,	8
3	,,	12
4	,,	16
5	,,	20
6	,,	24
7	,,	28
8	,,	32
9	,,	36
10	,,	40
11	,,	44
12	,,	48

5 times		
1	are	5
2	,,	10
3	,,	15
4	,,	20
5	,,	25
6	,,	30
7	,,	35
8	,,	40
9	,,	45
10	,,	50
11	,,	55
12	,,	60

6 times.		
1	are	6
2	,,	12
3	,,	18
4	,,	24
5	,,	30
6	,,	36
7	,,	42
8	,,	48
9	,,	54
10	,,	60
11	,,	66
12	,,	72

7 times		
1	are	7
2	,,	14
3	,,	21
4	,,	28
5	,,	35
6	,,	42
7	,,	49
8	,,	56
9	,,	63
10	,,	70
11	,,	77
12	,,	84

8 times		
1	are	8
2	,,	16
3	,,	24
4	,,	32
5	,,	40
6	,,	48
7	,,	56
8	,,	64
9	,,	72
10	,,	80
11	,,	88
12	,,	96

9 times		
1	are	9
2	,,	18
3	,,	27
4	,,	36
5	,,	45
6	,,	54
7	,,	63
8	,,	72
9	,,	81
10	,,	90
11	,,	99
12	,,	108

10 times		
1	are	10
2	,,	20
3	,,	30
4	,,	40
5	,,	50
6	,,	60
7	,,	70
8	,,	80
9	,,	90
10	,,	100
11	,,	110
12	,,	120

11 times		
1	are	11
2	,,	22
3	,,	33
4	,,	44
5	,,	55
6	,,	66
7	,,	77
8	,,	88
9	,,	99
10	,,	110
11	,,	121
12	,,	132

12 times		
1	are	12
2	,,	24
3	,,	36
4	,,	48
5	,,	60
6	,,	72
7	,,	84
8	,,	96
9	,,	108
10	,,	120
11	,,	132
12	,,	144

13 times		
1	are	13
2	,,	26
3	,,	39
4	,,	52
5	,,	65
6	,,	78
7	,,	91
8	,,	104
9	,,	117
10	,,	130
11	,,	143
12	,,	156

NOTE.—These tables must also be learned backwards. Say 9 into 81 is 9 as well as 9 times 9 are 81.

makes

BEECHAM'S HELP TO SCHOLARS.

Farthings Table.

Far.		*d.*	*Far.*		*d.*
4	make	1	27	make	6¾
5	,,	1¼	28	,,	7
6	,,	1½	29	,,	7¼
7	,,	1¾	30	,,	7½
8	,,	2	31	,,	7¾
9	,,	2¼	32	,,	8
10	,,	2½	33	,,	8¼
11	,,	2¾	34	,,	8½
12	,,	3	35	,,	8¾
13	,,	3¼	36	,,	9
14	,,	3½	37	,,	9¼
15	,,	3¾	38	,,	9½
16	,,	4	39	,,	9¾
17	,,	4¼	40	,,	10
18	,,	4½	41	,,	10¼
19	,,	4¾	42	,,	10½
20	,,	5	43	,,	10¾
21	,,	5¼	44	,,	11
22	,,	5½	45	,,	11¼
23	,,	5¾	46	,,	11½
24	,,	6	47	,,	11¾
25	,,	6¼	48	,,	12
26	,,	6½	960	,,	£1

Pence Table.

d.		*s.*	*d.*	*d.*		*s.*	*d.*
12	make	1	0	40	make	3	4
13	,,	1	1	48	,,	4	0
14	,,	1	2	50	,,	4	2
15	,,	1	3	60	,,	5	0
16	,,	1	4	70	,,	5	10
17	,,	1	5	72	,,	6	0
18	,,	1	6	80	,,	6	8
19	,,	1	7	84	,,	7	0
20	,,	1	8	90	,,	7	6
21	,,	1	9	96	,,	8	0
22	,,	1	10	100	,,	8	4
23	,,	1	11	108	,,	9	0
24	,,	2	0	110	,,	9	2
25	,,	2	1	120	,,	10	0
26	,,	2	2	130	,,	10	10
27	,,	2	3	132	,,	11	0
28	,,	2	4	140	,,	11	8
29	,,	2	5	144	,,	12	0
30	,,	2	6	200	,,	16	8
36	,,	3	0	240	,,	£1	

Shillings Table.

s.		*£*	*s.*	*s.*		*£*	*s.*
20	make	1	0	150	make	7	10
30	,,	1	10	160	,,	8	0
40	,,	2	0	170	,,	8	10
50	,,	2	10	180	,,	9	0
60	,,	3	0	190	,,	9	10
70	,,	3	10	200	,,	10	0
80	,,	4	0	300	,,	15	0
90	,,	4	10	400	,,	20	0
100	,,	5	0	500	,,	25	0
110	,,	5	10	600	,,	30	0
120	,,	6	0	800	,,	40	0
130	,,	6	10	1000	,,	50	0
140	,,	7	0	2000	,,	100	0

Table of Factors.

12	=	2	×	6	48	=	4	×	12
12	=	3	,,	4	48	=	6	,,	8
14	=	2	,,	7	49	=	7	,,	7
15	=	3	,,	5	50	=	5	,,	10
16	=	2	,,	8	54	=	6	,,	9
16	=	4	,,	4	55	=	5	,,	11
18	=	2	,,	9	56	=	7	,,	8
18	=	3	,,	6	60	=	5	,,	12
20	=	2	,,	10	60	=	6	,,	10
20	=	4	,,	5	63	=	7	,,	9
21	=	3	,,	7	64	=	8	,,	8
22	=	2	,,	11	66	=	6	,,	11
24	=	2	,,	12	70	=	7	,,	10
24	=	3	,,	8	72	=	6	,,	12
24	=	4	,,	6	72	=	8	,,	9
25	=	5	,,	5	77	=	7	,,	11
27	=	3	,,	9	80	=	8	,,	10
28	=	4	,,	7	81	=	9	,,	9
30	=	3	,,	10	84	=	7	,,	12
30	=	5	,,	6	88	=	8	,,	11
32	=	4	,,	8	90	=	9	,,	10
33	=	3	,,	11	96	=	8	,,	12
35	=	5	,,	7	99	=	9	,,	11
36	=	3	,,	12	100	=	10	,,	10
36	=	4	,,	9	108	=	9	,,	12
36	=	6	,,	6	110	=	10	,,	11
40	=	4	,,	10	120	=	10	,,	12
40	=	5	,,	8	121	=	11	,,	11
42	=	6	,,	7	132	=	11	,,	12
44	=	4	,,	11	144	=	12	,,	12
45	=	5	,,	9	144	÷	12	=	12

THE ROMAN NOTATION TABLE.

1	I.	11	XI.	25	XXV.	300	CCC.
2	II.	12	XII.	30	XXX.	400	CD.
3	III.	13	XIII.	40	XL.	500	D.
4	IV.	14	XIV.	50	L.	600	DC.
5	V.	15	XV.	60	LX.	700	DCC.
6	VI.	16	XVI.	70	LXX.	800	DCCC.
7	VII.	17	XVII.	80	LXXX.	900	CM.
8	VIII.	18	XVIII.	90	XC.	1000	M.
9	IX.	19	XIX.	100	C.	1500	MD.
10	X.	20	XX.	200	CC.	2000	MM.

A line placed over any letter increases the value 1,000 times, as—

$\bar{V}$ — 5,000 ;

$\bar{D}$ — 500,000 ;

$\bar{M}$ — 1,000,000.

SEASONS.

Spring begins ... 21st March ... Spring Equinox ... ... { 12 hours day / 12 hours night

Summer ,, ... 21st June ... Summer Solstice ... ... longest day

Autumn ,, ... 23rd Sept. ... Autumnal Equinox ... { 12 hours day / 12 hours night

Winter ,, ... 22nd Dec. ... Winter Solstice ... ... shortest day

Quarter Days { Lady Day, March 25th. / Midsummer Day, June 24th. — Michaelmas Day, September 29th. / Christmas Day, December 25th.

Half Quarter Days...February 8th. May 9th. August 11th. November 11th.

Thirty days hath September,
April, June, and November,
All the rest have thirty-one,
Excepting February alone
Which hath twenty-eight days clear,
And twenty-nine each Leap Year.

NOTE.—When the date is divisible by 4 without remainder, it is Leap Year, as 1908 ; but with the even hundreds :—1600, 1800, 1900, the *first two figures* must be divisible by 4 if it is a Leap Year.

TIME MEASURE.

60 Seconds	1 Minute.	4 Weeks	1 Lunar month.
60 Minutes	1 Hour.	13 L. months and 1 day	1 Year.
24 Hours	1 Day.	52 Weeks and 1 day ...	1 Year.
7 Days	1 Week.	28, 29, 30, or 31 days...	1 Calendar month.
365 Days	1 Year.	12 Calendar months ...	1 Year.
366 Days	1 Leap Year.	10 Years	1 Decade.
100 Years	1 Century.		

Avoirdupois Weight.

16 Drams ...437½ grains ... 1 *oz.*
16 Ounces...7,000 „ ... 1 *lb.*
14 Lbs. ... ... 1 *Stone.*
28 Pounds *or* 2 Stones 1 *qr. of cwt.*
4 Quarters *or* 8 Stones *or* 112 lbs. 1 *cwt.*
20 Hundred-weights *or* 2,240 lbs. 1 *ton.*

Long Measure.

12 Inches (*in.*) ... ... 1 *ft.*
3 Feet *or* 36 inches ... ... 1 *yd.*
5½ Yards... 1 *Rod, perch, or pole.*
22 Yards, *or* 4 poles ... 1 *Chain.*
40 Poles *or* 10 Chs., *or* 220 yds.... 1 *fur.*
8 Furlongs *or* 80 chs. *or* 1,760 yds. 1 *ml.*
3 Miles ... ... 1 league *lea.*
7·92 Inches ... ... 1 *lk.*
100 Links ... 22 yards 1 *chain.*

7 Yards ... ...1 *Irish perch.*
2,240 Yards ... ...1 *Irish mile.*

Square Measure.

144 Sq. Inches...12×12... 1 *sq. ft.*
9 Sq. Feet ... 3× 3... 1 *sq. yd.*
30¼ Sq. Yds. ...5½×5½... 1 *sq. pl.*
40 Poles *or* 1,210 sq. yds. ... 1 *rd.*
4 Roods *or* 4,840 sq. yds. ... 1 *ac.*
640 Acres *or* 6,400 sq. chs. ... 1 *sq. ml.*
10,000 Sq. Links...484 sq. yds. 1 *sq. ch.*
10 Sq. Chains, 100,000 sq. lks. 1 *Acre.*

49 Sq. Yards ... 1 *sq. perch, Irish.*
7,840 Sq. Yards ... 1 *Irish acre.*

Cubic Measure.

1,728 C. Inches...12×12×12... 1 *cu. ft.*
27 C. Feet ... 3× 3×3... 1 *cu. yd.*

Measure of Capacity.

For Liquids, Fruits, and Grains.

4 Gills ... ... 1 Pint *pt.*
2 Pints ... ... 1 Quart *qt.*
4 Quarts, *or* 8 pts. ... 1 Gallon *gal.*
2 Gallons ... ... 1 Peck *pk.*
4 Pecks, *or* 8 gals. ... 1 Bushel *bush.*
8 Bushels ... ... 1 Quarter *qr.*

Old Troy Weight.

Used in weighing gold, silver, jewels, &c.

24 Grains (*gr.*) ...1 Pennyweight *dwt.*
20 Pennyweights 480 grains... 1 *oz.*
12 Ounces ... 5,760 grains... 1 *lb.*

Miscellaneous.

2 Articles...make 1 Brace or Couple.
12 Articles... „ ... 1 Dozen.
12 Dozen ... „ ... 1 Gross.
20 Articles... „ ... 1 Score.
24 Sheets of Paper make 1 Quire.
120 Sheets ... „ ... 5 Quires.
20 Quires ... „ ... 1 Ream.
1 Gallon = ·1604 cu.ft. = 277·27 cu. in.
1 Gal. of Water at 62°F weighs 10 lbs.
1 Cu.ft. of water = 62·3 lbs. or 6·23 gals.
1 Knot or Geog. mile = 6,080 ft.
1 Rod B'kw'k = 306¼ cu.ft. = 11⅓ cu.yd.
1 Ton Granite = 13½ cu. ft.
1 Square of Slates = 100 sq. ft.
1 Cu. ft. of Oak = 40 to 60 lbs.
Breaking wt. of beam = $c \times b \times d^2 \div l$.
1 Cu. yd. of earth = 1 load.
40 Cu. ft. rough timber = 1 ton or load.

Angular Measure.

60 seconds (″) ... make 1 minute′.
60 minutes (′) ... „ 1 degree°
90 degrees (a right angle) „ 1 quadrant.
180 „ (two right angles) „ 1 semicircle.
360 „ or twelve signs „ 1 circle.
57·3° = 1 radian.

Apparent Motion of the Sun.

The Sun moves 360° in 24 hours, 15° in 1 hour, 1° in 4 mins.; and ¼° in 1 min.

60 Geographical, *or* 69⅓ English Miles 1 degree (1°) of Latitude, but degrees of Longitude vary in length according to the Latitude, because all the meridan circles meet at the poles. In Latitude 50° a degree measures 44·35 English miles. In Latitude 60° a degree measures 34·5 English miles.

PRACTICE TABLES.

Parts of a Sovereign.

s.	*d.*		
13	4	..	$\frac{2}{3}$
10	0	..	$\frac{1}{2}$
6	8	..	$\frac{1}{3}$
5	0	..	$\frac{1}{4}$
4	0	..	$\frac{1}{5}$
3	4	..	$\frac{1}{6}$
2	6	..	$\frac{1}{8}$
2	0	..	$\frac{1}{10}$
1	8	..	$\frac{1}{12}$
1	4	..	$\frac{1}{15}$
1	3	..	$\frac{1}{16}$
1	0	..	$\frac{1}{20}$
0	8	..	$\frac{1}{30}$
0	$7\frac{1}{2}$	..	$\frac{1}{32}$
0	6	..	$\frac{1}{40}$
0	4	..	$\frac{1}{60}$
0	3	..	$\frac{1}{80}$
0	2	..	$\frac{1}{120}$
0	$1\frac{1}{2}$	..	$\frac{1}{160}$
0	1	..	$\frac{1}{240}$

Parts of a Shilling.

d.		
9	..	$\frac{3}{4}$
8	..	$\frac{2}{3}$
6	..	$\frac{1}{2}$
4	..	$\frac{1}{3}$
3	..	$\frac{1}{4}$
2	..	$\frac{1}{6}$
$1\frac{1}{2}$	..	$\frac{1}{8}$
1	..	$\frac{1}{12}$
$\frac{1}{2}$	..	$\frac{1}{24}$
$\frac{1}{4}$	..	$\frac{1}{48}$

Parts of a Quarter Cwt.

lbs.		
14	..	$\frac{1}{2}$
7	..	$\frac{1}{4}$
4	..	$\frac{1}{7}$
$3\frac{1}{2}$	..	$\frac{1}{8}$
2	..	$\frac{1}{14}$
$1\frac{3}{4}$	..	$\frac{1}{16}$
1	..	$\frac{1}{28}$

Parts of a Ton.

cwts.qrs.			
10	0	..	$\frac{1}{2}$
5	0	..	$\frac{1}{4}$
4	0	..	$\frac{1}{5}$
2	2	..	$\frac{1}{8}$
2	0	..	$\frac{1}{10}$
1	1	..	$\frac{1}{16}$
1	0	..	$\frac{1}{20}$
0	2	..	$\frac{1}{40}$
0	1	..	$\frac{1}{80}$

Parts of a Cwt.

qrs.	*lbs.*		
2	0	..	$\frac{1}{2}$
1	0	..	$\frac{1}{4}$
0	16	..	$\frac{1}{7}$
0	14	..	$\frac{1}{8}$
0	8	..	$\frac{1}{14}$
0	7	..	$\frac{1}{16}$
0	4	..	$\frac{1}{28}$
0	2	..	$\frac{1}{56}$
0	1	..	$\frac{1}{112}$

Parts of an Acre.

80	pls.	or	2 rds.	$\frac{1}{2}$
40	,,	,,	1 ,,	$\frac{1}{4}$
32	,,	,,	968 yds.	$\frac{1}{5}$
20	,,	,,	605 ,,	$\frac{1}{8}$
16	,,	,,	484 ,,	$\frac{1}{10}$
—	,,	,,	440 ,,	$\frac{1}{11}$
10	,,	,,	— ,,	$\frac{1}{16}$
8	,,	,,	242 ,,	$\frac{1}{20}$

Parts of a Mile.

4	fur.	(880 yds.)	$\frac{1}{2}$
2	,,	(440 ,,)	$\frac{1}{4}$
1	,,	(220 ,,)	$\frac{1}{8}$
32	poles	(176 ,,)	$\frac{1}{10}$
20	,,	(110 ,,)	$\frac{1}{16}$
16	,,	(88 ,,)	$\frac{1}{20}$
8	,,	(44 ,,)	$\frac{1}{40}$
4	,,	(22 ,,)	$\frac{1}{80}$
2	,,	(11 ,,)	$\frac{1}{160}$
1	,,	($5\frac{1}{2}$,,)	$\frac{1}{320}$

It is a good practice for Parents to keep a box of

BEECHAM'S PILLS

handy, not only for their own benefit, but for the most important object of setting aright any minor ailments affecting their children. By the timely use of BEECHAM'S PILLS much serious illness may be avoided and no time lost at School. To give one PILL when required will be found a good home practice.

Involution.

Square of			*Cube of*		
13	is	169	1	is	1
14	,,	196	2	,,	8
15	,,	225	3	,,	27
16	,,	256	4	,,	64
17	,,	289	5	,,	125
18	,,	324	6	,,	216
19	,,	361	7	,,	343
20	,,	400	8	,,	512
30	,,	900	9	,,	729
40	,,	1,600	10	,,	1,000
50	,,	2,500	11	,,	1,331

Reverse these for Square and Cube Roots.

Vulgar and Decimal Fractions.

$\frac{1}{2}$	=	·5	$\frac{1}{5}$	=	·2	$\frac{1}{3}$	=	$\dot{3}$
$\frac{1}{4}$	,,	·25						
$\frac{3}{4}$	,,	·75	$\frac{2}{5}$	,,	·4	$\frac{2}{3}$	,,	$\dot{6}$
$\frac{1}{8}$	,,	·125						
$\frac{3}{8}$	,,	·375	$\frac{3}{5}$	,,	·6	$\frac{1}{9}$	,,	$\dot{1}$
$\frac{5}{8}$	,,	·625						
$\frac{7}{8}$	,,	·875	$\frac{4}{5}$	,,	·8	$\frac{2}{9}$	,,	$\dot{2}$
						$\frac{1}{6}$	,,	$\dot{1}6$

Interest and Discount.

		s.	d.			
$1\frac{1}{4}$%	is	0	3	in the £	=	$\frac{1}{80}$
$1\frac{1}{2}$	,,	0	$3\frac{3}{5}$	,, £		
2	,,	0	$4\frac{4}{5}$	,, £	=	$\frac{1}{50}$
$2\frac{1}{2}$	,,	0	6	,, £	=	$\frac{1}{40}$
3	,,	0	$7\frac{1}{5}$	,, £		
$3\frac{1}{2}$	,,	0	$8\frac{2}{5}$	,, £		
4	,,	0	$9\frac{3}{5}$	,, £	=	$\frac{1}{25}$
$4\frac{1}{2}$	,,	0	$10\frac{4}{5}$	,, £		
$4\frac{1}{6}$	,,	0	10	,, £	=	$\frac{1}{24}$
5	,,	1	0	,, £	=	$\frac{1}{20}$
6	,,	1	$2\frac{2}{5}$	,, £		
$6\frac{1}{4}$	,,	1	3	,, £	=	$\frac{1}{16}$
$6\frac{2}{3}$	,,	1	4	,, £	=	$\frac{1}{15}$
$7\frac{1}{2}$	,,	1	6	,, £		
$8\frac{1}{3}$	,,	1	8	,, £	=	$\frac{1}{12}$
10	,,	2	0	,, £	=	$\frac{1}{10}$
$12\frac{1}{2}$	,,	2	6	,, £	=	$\frac{1}{8}$
15	,,	3	0	,, £		
$16\frac{2}{3}$	,,	3	4	,, £	=	$\frac{1}{6}$
$17\frac{1}{2}$	,,	3	6	,, £		
20	,,	4	0	,, £	=	$\frac{1}{5}$
$22\frac{1}{2}$	,,	4	6	,, £		
25	,,	5	0	,, £	=	$\frac{1}{4}$
$33\frac{1}{3}$	,,	6	8	,, £	=	$\frac{1}{3}$
50	,,	10	0	,, £	=	$\frac{1}{2}$
75	,,	15	0	,, £	=	$\frac{3}{4}$

Algebraic Factors.

$(a+b)^2 = a^2+b^2+2ab$
$(a-b)^2 = a^2+b^2-2ab$
$(a+b)(a-b) = a^2-b^2$
$(a+b+c+d)^2 = a^2+b^2+c^2+d^2+2ab+2ac+2ad+2bc+2bd+2cd$
$(a+b)^3 = a^3+3a^2b+3ab^2+b^3$
$(a-b)^3 = a^3-3a^2b+3ab^2-b^3$
$(a+b)^4 = a^4+4a^3b+6a^2b^2+4ab^3+b^4$
$(a-b)^4 = a^4-4a^3b+6a^2b^2-4ab^3+b^4$
$a^6+b^6 = (a^2+b^2)(a^4-a^2b^2+b^4)$

$(a+b+c)^2 = a^2+b^2+c^2+2ab+2ac+2bc$
$(a-b+c)^2 = a^2+b^2+c^2-2ab+2ac-2bc$
$(a+b-c)^2 = a^2+b^2+c^2+2ab-2ac-2bc$
$a^3+b^3 = (a+b)(a^2-ab+b^2)$
$a^3-b^3 = (a-b)(a^2+ab+b^2)$
$a^4-b^4 = (a^2-b^2)(a^2+b^2)$
$a^4+a^2b^2+b^4 = (a^2+ab+b^2)(a^2-ab+b^2)$
$a^6-b^6 = (a^3-b^3)(a^3+b^3)$ or $(a^2-b^2)(a^4+a^2b^2+b^4)$

When n is even x^n-y^n is exactly divisible by $(x+y)$ or $(x-y)$ but x^n+y^n is not.
When n is odd x^n-y^n is exactly divisible by $(x-y)$ and x^n+y^n by $x+y$.

TABLES OF THE "METRIC SYSTEM."

Length.

Myriametre	=	10,000 metres.
Kilometre	=	1,000 ,,
Hectometre	=	100 ,,
Decametre	=	10 ,,

METRE = The 10 millionth part of a quarter of a meridian circle.

Decimetre	=	·1 metres.
Centimetre	=	·01 ,,
Millimetre	=	·001 ,,

A Metre = 39·37 *inches.*

25·4 *mm.* = 1 *inch.*

Surface Measure.

for Walls, Floors, Paper, Glass, &c.

The *SQUARE METRE* contains—

100 Square Decimetres.
10,000 ,, Centimetres.
1,000,000 ,, Millimetres.

Surface Measure

for Fields, Woods, &c.

Hectare = 100 ares.
ARE = 100 Square Metres.
Centiare = ·01 of an are = 1 sq. M.
An Are = 119.6033 Square Yards.

Volume Measure.

for Wine, Oil, Wheat, Apples, &c.

The Kilolitre	=	1,000 litres.
,, Hectolitre	=	100 ,,
,, Decalitre	=	10 ,,
LITRE	=	1 Cubic Decimetre.
The Decilitre	=	·1 litres.
,, Centilitre	=	·01 ,,
,, Millilitre	=	·001 ,,

A Litre of distilled water weighs 1 Kilogramme, and equals 1·76077 *pints.*

Measure of Solidity.

for Masonry, Capacity of Docks, &c.

The Unit is the CUBIC METRE which contains—

1,000 cubic Decimetres.
1,000,000 ,, Centimetres.
1,000,000,000 ,, Millimetres.

Measure of Solidity.

for Firewood, Ropes, Dyewoods, &c.

The Decastere = 10 steres.
STERE = 1 Cubic Metre.
The Decistere = ·1 steres.
The Stere = 1 *cub. yd.* 8·31655 *cub. ft.*

Weight.

The Millier or Tonne	=	1,000 kilogrammes
,, Metric Quintal	=	100 ,,
,, Myriagramme	=	10 ,,
,, Kilogramme	=	1,000 grammes.
,, Hectogramme	=	100 ,,
,, Decagramme	=	10 ,,

GRAMME = a Cubic Centimetre of distilled water at 39½° F, weighed in a vacuum.

The Decigramme	=	·1 grammes
,, Centigramme	=	·01 ,,
,, Milligramme	=	·001 ,,

A Gramme = ·56438 *drams* *Kg.* = 2⅕ *lbs.*
453·6 *grammes* = 1 *lb.* [*nearly.*
A Millier is weight of 1 *cu. Metre of Water.*
A Kilogramme is weight of 1 *cu. dm. of Water.*

The French MONETARY Unit is the FRANC = 9½ pence.

The Franc	=	10 Decimes.
,,	=	100 Centimes.

20 *one-franc pieces and* 20 *two-franc pieces placed in line measure a metre.*

Suggested English Coinage.

10 mils	=	1 cent.
10 cents	=	1 florin.
10 florins	=	1 sovereign.

£1 = 10 florins = 100 cents = 1,000 mils.

MENTAL ARITHMETIC AIDS.

A Number will divide by :—

2 when last figure is even or a cypher.
3 when the sum of the digits can be divided by 3.
4 when the last two figures can be divided by 4 or are cyphers.
5 when last figure is 5 or 0.
6 when last figure is even or 0 and sum of digits will divide by 3.
7 when the number is composed of 6 figures all alike, e.g., 333,333 ; when composed of 6 figures of which first three are like last three, e.g., 421,421.
8 when the last 3 figures can be divided by 8 or are cyphers.
9 when the sum of the digits can be divided by 9.
25 when last 2 figures are 0's or will divide by 25.
125 when last 3 figures are 0's or will divide by 125.
37 and 111 when the No. is composed of the same 3 digits, e.g., 333,111.

To multiply by		*To divide by*	
5	add 1 cypher and divide by 2	5	multiply by 2 and place a · before last figure.
25	,, 2 cyphers ,, ,, 4	25	,, ,, 4 ,, ,, ,, ,, 2 figures.
125	,, 3 ,, ,, ,, 8	125	,, ,, 8 ,, ,, ,, ,, 3 figures.
625	,, 4 ,, ,, ,, 16	10	cut off last figure for a remainder.
10	,, 1 cypher.	100	,, ,, 2 figures for a remainder.
100	,, 2 cyphers.	1,000	,, ,, 3 ,, ,,
1,000	,, 3 ,,		

To multiply a number consisting of two digits by 11, add the figures together and place the result between them, as 71 × 11 = 781, unless the **result** exceeds 9, when it is dealt with as indicated in the example :

75 × 11 = 7 5 12 = 825

To find a year's income (Sundays included) at a given rate per day :—Take a sovereign, a half-sovereign, and five pence as many times as there are pennies in the given rate :—Example, 365 days at 17/5 per day. 17/5 = 209 pence (209 × £1 = £209) + (209 × 10/– = £104/10/–) + (209 × 5d. = 1045d. = £4/7/1) £209 + £104/10/– + £4/7/1 = £317/17/1 total.

To find the cost of any number of articles when the price is an aliquot part of a sovereign:—Take the number as sovereigns and divide by the aliquot part.

2,786 at 3/4 each : 2,786 divided by 6 = £464 6s. 8d.

Simple Interest Formulæ. Interest = P × R × T ÷ 100. Principal = I × 100 ÷ R and T. Rate = I × 100 ÷ P and T. Time = Interest × 100 ÷ P and R.

Mensuration Formulæ. **1.**—Area of square, rectangle, rhombus or rhomboid = base × height. Base = area ÷ height. Height = area ÷ base. **2.**—Area of Triangle = ½ base × height. **3.**—Area of Circle = $d^2 \times \cdot 7854$, or = $r^2 \times \pi$. **4.**—Circumference = diameter × π. **5.**—Cubical content of a box or volume of a solid = length × breadth × height. Length = volume ÷ breadth and height. Breadth = volume ÷ length and height. Height = volume ÷ length and breadth. **6.**—Vol. of Cylinder or Prism = base area × height. **7.**—Vol. of Cone or Pyramid = ⅓ base area × height. **8.**—Vol. of Sphere = $\frac{4}{3}r^3 \times \pi$. **9.**—Surface of Sphere = $4r^2 \times \pi$ or $d^2 \times \pi$. **10.**—Area of Square = diagonal^2 ÷ 2. **11.**—Side of Square = ½ diagonal × $\sqrt{2}$. **12.**—Diagonal of Square = side × $\sqrt{2}$. **13.**—Area of any quadrilateral = diagonal × half sum of perpendiculars from opposite angles. **14.**—Vol. of Log = Length × ($\frac{1}{4}$ girth)^2.

Note—π = 3·1416 or 3$\frac{1}{7}$. Note—$\sqrt{2}$ = 1·41421.

RAPID DECIMALISATION OF MONEY.

To decimalise 18s. 4½d. proceed as follows:—(*a*) Bring the pence and halfpence (or farthings, if there are any) to farthings. $4\frac{1}{2} \times 4 = 18$. Put down 8 and carry 1. (*b*) Multiply the shillings by 5 and add the number to be carried. $18 \times 5 = 90$ and 1 carried = 91. The answer is 0·918.

Let us work another example and remember that if the number of pence in the question is 6 or more we must add another 1 to the farthings total. EXAMPLE: Decimalise 15s. 8¾d. $8\frac{3}{4} \times 4 = 35$. Now add 1 because the amount being dealt with is 6d. or over. $35 + 1 = 36$. Put down 6 and carry 3. $15 \times 5 = 75$ and 3 carried gives 78. The answer is 0·786.

The reverse operation is quite simple.

Change ·786 to shillings, pence, etc. (*a*) Divide the first two decimal figures by 5, which gives 15 and 3 over. Call the 15, shillings and treat the 36 as farthings (remembering to deduct 1 if the number is over 24, the number of farthings in sixpence). $36 - 1 = 35$ farthings = 8¾d. Answer, 15s. 8¾d.

Remember that $\frac{1}{4} = {\cdot}25$, $\frac{1}{2} = {\cdot}5$ and $\frac{3}{4} = {\cdot}75$. As it is generally necessary to go to 5 decimal places in order to obtain correct results we will now extend the examples given previously.

EXAMPLE A. 18s. 4½d. = ·918, $4\frac{1}{2} = 4{\cdot}5$. Divide this by 6, which gives 75 and place these figures after the answer given above, thus: 18s. 4½d. = ·91875.

EXAMPLE B. 15s. 8¾d. = ·786. In this case we have already added an extra 1 since the pence column is over 6d., so take 6d. off the amount, $8\frac{3}{4} - 6 = 2\frac{3}{4} = 2{\cdot}75$. Dividing by 6 as before gives 458. Hence 15s. 8¾d. = ·786458. (Five decimal places are generally sufficient.)

Application of the Method.

To find the cost of 1,000 articles at £1 17s. 7¼d. each: £1 17s. 7¼d. = £1·880208. £1·880208 × 1000 = £1880·208 = £1880 4s. 2d. answer.

A SPLENDID PICK-ME-UP.

When you're jaded—weary—off colour, take Beecham's Powders. They freshen you up—clear your head—steady your nerves. They do this without affecting heart.

Beecham's Powders—trusted by thousands for relieving and stopping

COLDS,
HEADACHES,
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Buy a packet to-day.

BEECHAM'S POWDERS

NOT A LAXATIVE

CONTAIN NO ASPIRIN

8 Powders 1/3. Single 2d. Tablet Form (16) 1/4.

GEOGRAPHICAL DEFINITIONS.

Geography teaches about the surface of the earth. This surface is composed of **Land** and **Water.** If we were to divide it into four parts, three would be water, and one land.

The **Earth** is a planet or moving star. In shape it is like an orange. It moves in two ways ; 1st, rotates on its own axis, in 24 hours, causing Day and Night ; 2nd, revolves round the Sun, in 365¼days, causing the Four Seasons, Spring, Summer, Autumn, Winter.

A map of a **Hemisphere** is a plan of half the earth. It may be **Northern,** lying North of the Equator ; **Southern,** lying South ; **Eastern,** containing Europe, Asia, Africa, and Australia ; **Western,** containing North and South America.

The **Axis** is the imaginary line on which the earth rotates. Its ends are called the **N.** and **S. Poles.** The diameter, or distance through the earth, is 8,000 miles. The circumference, or the distance round the outside, is 25,000 miles. The **Equator** is an imaginary line passing round the earth, midway between the Poles.

Latitude is distance North or South of the Equator, measured in degrees up to 90°, each = 69½ English miles. A **Meridian** is a line passing half-way round the Earth from the N. Pole to the S. Pole. The line passing through Greenwich is called our **First Meridian,** and is marked 0° on English maps. **Longitude** is distance East or West of the First Meridian. In Great Britain the length of degree of longitude varies from 34 miles in the N., to 45 miles in the S. A **Zone** is a belt or girdle passing round the earth. There are 5 ; one Torrid, very hot, round about the Equator ; two Frigid, very cold, one surrounding each pole ; and two Temperate, between the Torrid and Frigid zones.

A **Continent** is the largest division of land. There are 5 ; Asia, America, Africa, Europe, Australia.

A **Country** is part of a continent, having a particular name. England, Scotland, Ireland, Wales, France, Spain, Germany.

A **County** or **Shire** is part of a country ; sometimes called a **Province,** or Department, Canton, State, &c.

A **Riding** (Trything) is a third part of a county. Yorkshire is so divided.

An **Island** is a piece of land surrounded by water.

A **Peninsula** is a piece of land nearly surrounded by water.

An **Isthmus** is a narrow neck of land joining two large divisions.

A **Cape** is a point of land stretching into the sea. Other names are **Head, Ness, Naze, Mull, Butt, Promontory, Foreland, Point, Bill.**

A **Coast** or **Shore** is the land washed by the sea. A **Beach** is the portion of shore which is alternately covered and uncovered by the tide.

A **Hill** is a high mass of land, less than 1,000 feet above sea-level.

A **Mountain** is a high mass of land more than 1,000 feet above sea-level ; an isolated mountain is a **Peak** ; several peaks form a **Group** ; connected mountains form a **Chain** or **Range** ; a **Volcano** is an opening in the surface of the earth from which lava, ashes, dust and steam pour out ; a hill is often formed of some of these materials, and the opening or mouth is called the **Crater.**

GEOGRAPHICAL DEFINITIONS—continued.

A **Plain** is a level portion of land, at no great height above the level of the sea. The plains in South Russia and Central Asia are termed **Steppes**, and are generally uncultivated. In North America, they are called **Prairies** and **Savannahs**; and in South America, **Llanos, Pampas**, and **Selvas.**

A **Table Land** or **Plateau** is a level portion of land at a considerable elevation.

A **Valley** is low land, bounded on each side by hills. Other names are **Vale, Canyon, Dale, Glen, Gorge, Strath.** A **Ravine** is a long hollow between hills.

A **Desert** is a barren tract of land. A **Cliff** is the vertical face of a mountain or rocky sea-shore.

An **Oasis** is a green spot in a desert, containing trees and a spring of water.

An **Ocean** is the largest division of salt water. There are 5; Pacific, Atlantic, Indian, Antartic, Arctic. A **Sea** is part of an ocean; if studded with islands, it is called an **Archipelago.** A **Gulf** or **Bay** is a portion of water extending into the land. An **Estuary** is the wide mouth of a river, which is only filled with water when the tide flows in, and exhibits a long stretch of sand or mud when the tide ebbs. Other names are **Aber** and **Firth.** A **Harbour** or **Haven** is an inlet of the sea, where ships can shelter. A **Creek** or **Cove** is a small inlet of the sea. In Australia and America a river is often called a Creek. A place where ships can anchor near a coast is called a **Roadstead** or **Road.** A **Strait** is a narrow neck of water joining two large portions. A **Channel** is similar to a strait, but longer and wider.

A **Lake** is a portion of water surrounded by land; small lakes are termed **Pools** or **Meres**; if in high land or among mountains, **Tarns**; if shallow and filled with sea water, **Lagoons.** In Ireland, lakes are called **Loughs**; in Scotland, **Lochs.** A **Lagoon** is also the name given to the calm water inside a ring-shaped coral island.

A **Spring** is water flowing out of the earth, and generally forms the beginning of a river. **Geysers** are natural fountains of water.

A **River** is a running stream of fresh water, issuing from a hill, or other high land, and generally flowing into the sea. The beginning is its **Source**; the ending, its **Mouth**; the sides, its **Banks**; little streams running into it, its **Feeders, Tributaries** or **Affluents**; where the river lies, its **Bed.** The land drained by one river and its tributaries is its **Basin.**

The high land dividing two basins is the **Water-parting**; and the slopes down which the streams run, form the **Watershed.** A **Rivulet, Brook,** or **Streamlet,** is a little river. A **Confluence** is a place where two rivers unite. The right and left **Banks** of a river take their names from the **Course,** or direction in which the water runs. An artificial river is called a **Canal.**

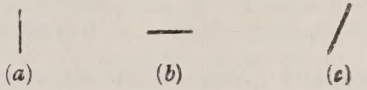
A **Waterfall** is a place where the water of a river falls from a higher to a lower level. A **Cataract** is a large waterfall. A **Rapid** is a place where the bed of a river slopes, causing the river to run swiftly. A **Cascade** is formed when the river runs down a steep, rocky bed. A **Glacier** is a tremendous mass of ice filling a valley, and moving slowly downwards. An **Iceberg** is a floating mountain of ice broken off the end of a Glacier by waves. An **Avalanche** is a mass of snow, ice, stones, etc., slipping down a mountain side.

GEOMETRY DEFINITIONS.

A **Point** has position, but not size.

A **Line** has length, but not breadth.

A Straight (or right) Line is the shortest distance between two points and is shorter than curved line.

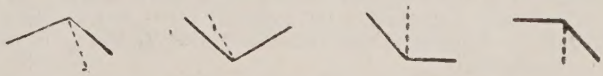


(*a*) A Vertical Line is upright.
(*b*) A Horizontal Line is level.
(*c*) An Oblique Line is sloping.

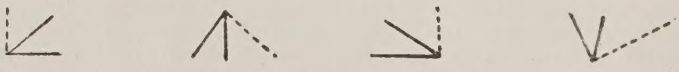
Parallel Lines are the same distance apart everywhere.

Angle. Two straight lines drawn from the same point are said to contain an angle.

A Right Angle is a square corner. The lines which contain it are said to be perpendicular to each other.



An Obtuse Angle (blunt) is greater than a right angle.



An Acute Angle (sharp) is less than a right angle.

A **Superficies** is a surface flat or curved.

A Plane is a perfectly flat surface and is either vertical, horizontal, or slanting. A figure is a surface enclosed by three or more lines, straight or curved. Two straight lines cannot enclose a space.

Plane Figures, such as Squares, Triangles, Circles, and Hexagons, have only length and breadth, and lie completely on one surface.

Triangles are figures with three angles: they are called Trilaterals also, because they have three sides.

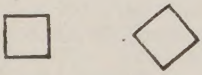
GEOMETRY DEFINITIONS—continued.

(*a*) (*b*) (*c*) (*d*) (*e*)

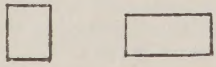
(*a*) An equilateral Triangle has three equal sides.
(*b*) An Isosceles Triangle has two equal sides.
(*c*) A Right-Angled Triangle has one angle a right angle.
(*d*) An Obtuse Angled Triangle has one angle obtuse.
(*e*) An Acute-angled Triangle has three acute angles.

The Base is the line on which the triangle stands.
The Altitude is the perpendicular height.
The Apex or Vertex is the top point.

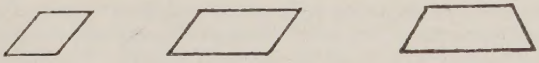
Quadrilaterals are figures with four sides: they are called **Quadrangles** also, because they have four angles.



A Square has four equal sides and four right angles.



A Rectangle or Oblong has its opposite sides equal and its angles are right angles.

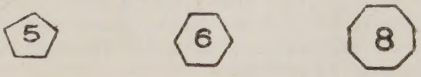


(*a*) (*b*) (*c*)

(*a*) A Rhombus has four equal sides but its angles are not right angles.
(*b*) A Parallelogram is a quadrilateral whose opposite sides are parallel.
(*c*) A Trapezium is a quadrilateral of which two sides are parallel.

A Diagonal is the line joining the opposite angles of a quadrilateral.
A Diameter is the line joining the centres of opposite sides of a quadrilateral.

A **Polygon** is a plane figure bounded by more than four straight lines. It is regular when all its sides and angles are equal.



GEOMETRY DEFINITIONS—continued.

A Regular Pentagon is a figure with five equal angles and five equal sides; Hexagon, six; Heptagon, seven; Octagon, eight; Nonagon, nine; Decagon, ten; Undecagon, eleven; Duodecagon, twelve.

A **Circle** is a plane figure bounded by one line called a circumference, and is such that all lines drawn from a point within the figure to the circumference are equal. The point is called the Centre. Each of these lines is called a Radius. A **Diameter** is a straight line through the centre from circumference to circumference. A **Chord** is a straight line across a circle, but not through the centre. A **Tangent** is a line touching a circle. An **Arc** is any part of the circumference. A **Semi-Circle** is half a circle. A **Quadrant** is quarter of a circle. A **Circle** contains 360°. A **Right Angle**=90°. 45°=half a Right Angle. 30°=one-third of a Right Angle. A **Segment** is a piece cut off a circle by a chord. A **Sector** is a part of a circle enclosed by an arc and two radii.

An **Ellipse** is a figure bounded by a continuous curved line, and is longer than it is broad. A true Ellipse is not oval or egg-shaped. The Major Axis is longer than the Minor Axis.

Solids have length, breadth, and height (or depth, or thickness) and have two or more surfaces, as a cone, cylinder, cube pyramid, prism or sphere.

A **Model** or Perspective drawing represents an object (sometimes in outline only) as it appears to the eye. Distant objects appear small. Receding parallel lines are drawn towards each other. The axes of cones and cylinders must be drawn at right angles to the axes of their bases.

A **Plan** is a drawing of the actual shape of the surface covered by an object viewed from above. An **Elevation** is a drawing of the actual shape of the surface covered by an object viewed from the front or side.

A **Scale** drawing is the representation of an object one-half, one-third, one-tenth or some other fraction of its real size. Scale $\frac{1}{2}$ means that a line $\frac{1}{2}$-in. long represents something which is 1-in. long; and a line 6-in. long represents something 12-in. long; scale $\frac{1}{10}$ means that $\frac{1}{10}$ inch represents 1 inch; and $1\frac{3}{6}$ inch represents 12 inches, or 1 foot. Scale $\frac{1}{3}$ means $\frac{1}{3}$ inch represents 1 inch; and $\frac{3}{4}$ inch represents 3 inches; and $\frac{1}{2}$ inch represents 12 inches. Scale $\frac{1}{12}$ means that $\frac{1}{12}$ inch represents 1 inch; $\frac{5}{12}$ inch represents 5 inches; $1\frac{3}{4}$ inch represents 12 inches; $1\frac{7}{12}$ inch represents 17 inches.

CAPITAL LETTERS must be given to names and titles of persons, countries, provinces, cities, villages, streets, mountains, rivers, seas, ships, feasts, great events—*e.g.: Mr. Tom Johnson, The Royal George Church St., The Boer War, Mt. Vesuvius;* the pronoun *I;* the interjection *Oh!;* adjectives like *English, Irish, French, Spanish;* the first word of every sentence, quotation, or line of poetry; the names of the principal articles in catalogues, bills, titles of books, addresses on envelopes; and to all names and titles of God, as *The Almighty, Jehovah, The Saviour.* The letter next after a full stop is always a capital.

FULL STOPS (or periods) must be placed at the end of every sentence and abbreviation: *e.g. The Romans landed B.C.* 55. *Sing. Num. Neut. Gen. Oct. Sep. Nov.*

QUOTATION MARKS AND INVERTED COMMAS. The exact words spoken by someone, or quoted from a book, must be placed within quotation marks—*e.g., The boy cried, "Mary is here." "Come to me," said Jack.*

A point of INTERROGATION is placed after every question—*e.g., Where are you? Have you seen my brother?*

An EXCLAMATION point follows such words as *Oh! Alas! Hurrah! Hush!*

The APOSTROPHE denotes ownership or else the omission of a letter—*Jane's; John's; Boys'; I'll; Can't; O'er; E'er; Didn't.* The Apostrophe and S follow all possessive singular nouns—*The boy's book; Tom's hat; Mr. Jones's coat;* The apostrophe *only* follows a plural noun which ends in S, as *Six boys' coats are now ready.* A plural noun which does not end in S takes both the Apostrophe and S, as *The men's dinners; The children's boots.* Pronouns do not require the Apostrophe, as *Hers, Yours, Its, His, Theirs.*

CORRECT SPELLING is very important. Notice particularly words which are sounded much alike:—*There, their; Where, were; as, has; whether, weather; hear, here; pane, pain; story, storey; to, too, two; of, off; kernel, colonel; desert, dessert; tail, tale; grate, great; hare, hair.*

COMMON ERRORS. I *be* a good cricketer (am). He went to *lay* down (lie). That *aint* right (is not). He never *done* anything (did). I could have *went* (gone). It *do* not matter (does). It *have* contracted (has). Let *I* do it (me). He went *their* (there). We saw *there* house (their). *Has* he *as* been before (As he has). I have no books for *they* (them). That was *her* (she). I know *who* I saw (whom). He stands between you and *I* (me). The lion *who* chased us is dead (which). We know the man *which* watched us (who). The horse *having* been in the field (had). We *was* going (were).

When writing a letter, put the address and date at the top. Sign your full name at the end, and then write the title (Mr., Esq., Mrs., Miss) and address of the person to whom the letter is sent. *See page* 19.

Do not use the superlative degree of adjectives, as *tallest, most beautiful,* instead of the comparative, as taller, more beautiful, when comparing TWO things.

Adjectives should not be used for adverbs, as He ran very *quick* (quickly). Use *and, but, then,* and *so* as seldom as possible, especially at the beginning of a sentence.

Do not use pronouns so often as to confuse two persons together—He told *him he* was going to *his* house. Before using a pronoun be sure that you have given the noun almost immediately before it. Observe the rules of punctuation given above.

ABBREVIATIONS AND COMMON PHRASES.

A1 First Class ; A.B. Able Seaman.
Acc., Act. Account. [Lord
A.D. (Anno Domini) in the year of our
A.M. Before noon ; P.M. After noon.
Anon. Anonymous—without a name.
B.A. Bachelor of Arts ; M.A. Master
B.C. Before Christ. [of Arts
Britt. Rex King of the Britons.
B.P. British Public—Beecham's Pills.
C.C. County Council.
Cf. Compare ; q.v. which see.
Col. Colonel ; Capt. Captain.
Cr. Creditor ; Dr. Debtor or Doctor.
D.D. Doctor of Divinity.
D.G. By the Grace of God.
Do. ditto. The same.
D.V. God willing.
G.R. George the King.
Ed. Editor ; Esq. Esquire.
e.g. For example ; Ex. Example.
Fahr. Fahrenheit ; C. Centigrade.
F.D. Defender of the Faith.
F.R.S. Fellow of the Royal Society.
G.P.O. General Post Office.
H.M.S. His Majesty's Ship.
H.R.H. His or Her Royal Highness.
Ibid. in the same place.
i.e. (id est) that is.
Inst. Instant, this month.
I.H.S. Jesus, Saviour of men.
J.P. Justice of the Peace.
Lat. Latitude ; Long. Longitude.
Lieut. Lieutenant ; Gen. General.
M.D. Doctor of Medicine.
Mem. Memoranda, Notes.
Messrs. Messieurs, Sirs.
Mr. Mister ; Mrs. Mistress.
M.P. Member of Parliament.
MSS. Manuscripts.
N.North ; E.East ; W.West ; S.South.
N.B. Note, or mark well.
Nos. Numbers.
O.H.M.S. On His Majesty's Service.
Per cent. for a hundred.
Pro. tem. for the time being.
Prox. Next Month ; Ult. Past Month.
P.S. Postscript.
P.T.O. Please turn over.
R.S.V.P. Reply, if you please.
Rev. Reverend.
S. or St. Saint.
S.S. Steamship.
T.C. Town Councillor.
U.S.A. United States of America.
V.C. Victoria Cross ; Viz. Namely.
&c. etc. (et cetera) and others.

A la mode...According to the fashion.
Alias...Otherwise.
A propos...To the point.
Au revoir...Adieu till we meet again.
Bonâ fide...In good faith.
Bon marché...A cheap market.
Dieu et mon droit...God and my right.
Esprit de corps...The animating spirit of a number of persons.
Felo de se...Suicide.
Honi soit qui mal y pense...Evil to him who evil thinks.
Ich dien...I serve ; In toto...Entirely.
In re...In the matter of.
In statu quo...In the former state.
Inter alia...Among other things.
L'homme propose, et Dieu dispose... Man proposes and God disposes.
Lapsus linguæ...A slip of the tongue.
Multum in parvo...Much in little.
Nom de plume...An assumed title.
Non compos mentis...Not of sound
Pater Noster...Our Father. [mind.
Pons asinorum...The asses' bridge.
Poste restante...To remain till called for.
Pro bono publico...For the public good.
Pro ratâ...In proportion.
Quid pro quo...One thing for another.
Sine qua non...Something indispensable
Tempus fugit...Time flies.
Terra firma...Solid earth ; safe footing.
Tout ensemble...The whole taken
Versus...Against. [together.
Viâ...By the way of.
Vice versâ...The reverse.
Vox populi...The voice of the people.

LETTERING FOR MAPS, etc.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
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A B C D E F G H I J K L M N O P Q R S T
U V W X Y Z. 1 2 3 4 5 6 7 8 9 0.

FORMATION OF PLURALS OF NOUNS.

Number is the distinction in the form of a word to show whether reference is made to one object, or more than one.

There are two numbers—singular and plural. Singular denotes one thing *e.g.* girl, hat. Plural denotes more than one *e.g.* girls, hats.

The plural is formed in several ways :—

1. By adding s or es, *e.g.* boy, boys ; grass, grasses.
2. By changing f or fe into ves, *e.g.* calf, calves ; knife, knives ; half, halves.
3. By changing y into ies, *e.g.* lady, ladies ; baby, babies.
4. By changing the body of the word, *e.g.* man, men ; mouse, mice.

In some cases the word is alike for singular and plural, *e.g.* deer, fish, sheep, species.

Compound nouns form the plural by adding s to the principal word in the compound, *e.g.* aide-de-camp, aides-de-camp ; court-martial, courts-martial ; maid-servant, maid-servants.

419, Chester Road, Manchester,
2nd November, 1928.

MY DEAR JOHN,

Beecham's Pills, a very well-known remedy, are to be found in the majority of homes in Great Britain and her Dominions Overseas, and have been before the public for over sixty years. They are a useful Medicine for Children, if given to them in small doses, and are easily swallowed with jam or washed down with water.

Yours faithfully,
THOMAS BEECHAM.

JOHN MCVEY, Esq.,
Brunton, Yorkshire.

GREAT EVENTS IN HISTORY.

Learn some of these every year, according to your teacher's directions.

B.C. 55 Romans under Julius Cæsar land in Britain for the first time.
A.D.410 Romans leave Britain. Rome captured by Goths.
449 English Conquest began. Hengist and Horsa—Jutes—land in Kent.
597 Augustine preached Christianity in South ; Columba and Aidan in North.
827 Egbert, King of W. Saxons, became Overlord of all England.
901 Death of King Alfred, who started schools and a navy, and codified the laws.
1066 Norman Conquest. Tostig defeated at Stamford B. Harold at Hastings.
1086 Domesday Book produced. A general survey of England.
1170 Becket, Archbishop of Canterbury, murdered by four Knights.
1190 Richard I. joins the Third Crusade with Philip of France.
1215 The Great Charter signed by King John at Runnymede.
1265 Simon Montfort's Parliament, including members from towns.
1282 The Conquest of Wales by Edward I. 1291 First English Prince of Wales.
1314 Battle of Bannockburn. Beginning of Scottish Independence. King Bruce.
1349 The Black Death. Statute of Labourers. 1381 Wat Tyler's Rebellion.
1429 The Siege of Orleans. The English defeated by Joan of Arc.
1474 Printing introduced into England by William Caxton.
1485 Battle of Bosworth. End of War of Roses. Richard III and Henry VII.
1492 America—The New World—discovered by Christopher Columbus.
1532 The Reformation. 1559 Acts of Supremacy and Uniformity passed.
1588 Defeat of the Spanish Armada by Howard, Drake, etc. Q. Eliz. admirals.
1618 Execution of Raleigh by James I, to please Spaniards, after attack on Guiana.
1620 The Pilgrim Fathers, seeking freedom to worship God, landed in America.
1642 The Great Rebellion began—Marston M. ; Naseby ; Dunbar ; Worcester.
1660 The Restoration of the Monarchy. Gen. Monk sends to Breda for Charles II.
1688 The Revolution. James II deposed. Declaration of Right. K. William III.
1707 Act of Union between England and Scotland. Queen Anne and Marlborough.
1715 Old Pretender's Rebellion. Jacobites defeated at Preston and Sheriffmuir.
1745 The Young Pretender's Rebellion. Prestonpans, Culloden. F. Macdonald.
1756 English Prisoners in the Black Hole of Calcutta. Surajah D. Plassey & Clive.
1759 Capture of Quebec by General Wolfe. Montcalm beaten. Canada acquired.
1776 English Colonies in America declare their Independence. United States.
1789 French Revolution. 1793 King and Queen of France guillotined.
1800 The Act of Union of Great Britain and Ireland passed.
1805 Death of Nelson after defeating French and Spanish fleets at Trafalgar.
1815 Complete defeat of Napoleon by Wellington at Waterloo. N. in St. Helena.
1832 Reform Bill. 1846 Repeal of the Corn Laws. Peel, Cobden, Bright.
1854 The Crimean War. Alma, Balaclava, Inkerman, Sebastopol. F. Nightingale.
1857 Indian Mutiny. Massacre at Cawnpore. Delhi captured. Lucknow relieved.
1899 The Boer War. Ladysmith, Kimberley and Mafeking beseiged.
1901 Death of Queen Victoria. Accession of Edward VII.
1914 Great World War begun. England declared War on Germany, August 4th.
1918 Great World War ended. Germany, Austria, Turkey and Bulgaria defeated. Armistice signed Nov. 11th.
1919 Peace Treaty signed with Germany, June 28th. "League of Nations."
1922 Irish Free State (Agreement) Act, 1922 (Saorstat Eireann).
1924 First Labour Government in Great Britain.
1926 Longest Coal Strike, May to November.
1927 Wireless Telephony completed between England and U.S.A., Jan. 7th.
1928 British Parliamentary Votes given to women of 21 and upwards.

SKIN INFECTION

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